Trend Study 21-11-03

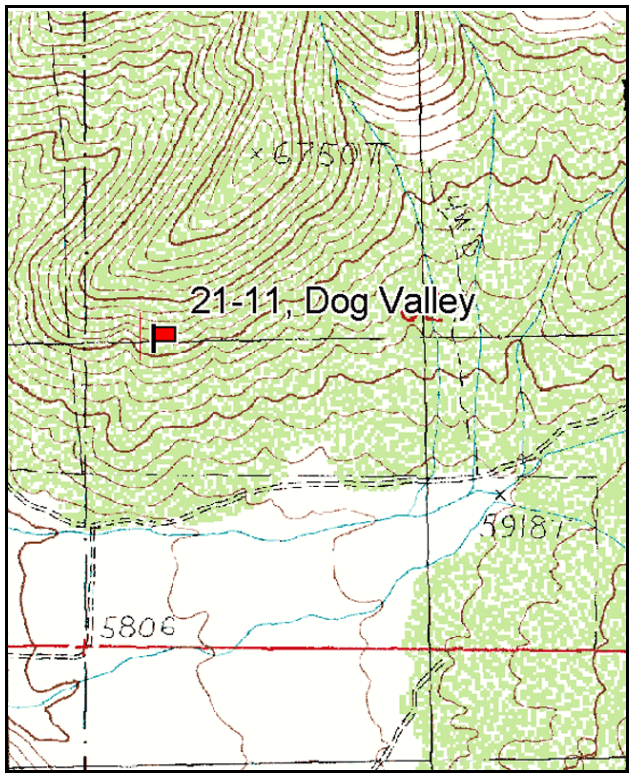
Study site name: Dog Valley . Vegetation type: Burned Cliffrose .

Compass bearing: frequency baseline 180 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 3 on 5ft and belt 5 on 2 ft.

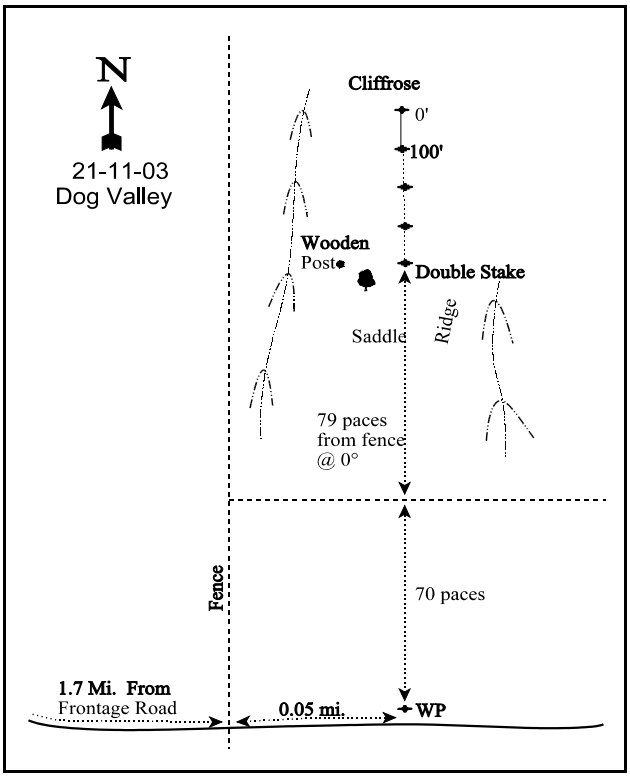
LOCATION DESCRIPTION

Head south on I-15 out of Kanosh. Take the first ranch exit south of Kanosh (exit #138). Drive under the freeway to the east side. Turn and drive north on the frontage road parallel to the interstate for 1.2 miles to a cattleguard. Just past the cattleguard turn right and go east 1.7 miles to a fence. From the fence continue 0.05 miles east to a witness post on the north side of the road by a large juniper. The witness post is a steel full high stake approximately 3 feet tall and 8 feet off the road. From the witness post, go 852 feet due north. You should use a tape to measure the 852 feet north to the 400' stake.



Map Name: Cove Fort

Township 24S , Range 6W , Section 32



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4281973 N, 364361 E

DISCUSSION

Dog Valley - Trend Study No. 21-11

This study was the first transect in the old Kanosh deer herd unit. It samples deer winter range above Dog Valley. The study is located in a Stansbury cliffrose community on a steep south facing slope (35%) overlooking sagebrush flats and cultivated fields. Elevation of the transect is 6,200 feet. The land is administered by the Forest Service and was grazed by cattle on a rest-rotation basis every other year for about a 10 year period (1975-1985). The site has been dominated by cheatgrass since 1985. A fire burned the entire area in 1996. In the past, before the rest-rotation program, the site had been severely overgrazed. The DWR Dog Valley pellet group transect measured deer use on the same slope that this study samples. Deer use varied between years, but generally there was moderately heavy use between 1985 and 1990 at an average of 66 deers day use/acre (163 ddu/ha) (Jense et al. 1990). Use has declined since the fire, but deer and elk are still using the site. Pellet group data taken in 1998 along the study site baseline estimated 47 deer and 4 elk use days/acre (116 ddu/ha and 10 edu/ha). In 2003, pellet group transect data estimated 116 deer days use/acre (286 ddu/ha) and 6 cow days use/acre (14 cdu/ha) on the site. Mormon crickets were very abundant on the site in June of 2003 when the study was read.

Soil on the site is shallow and rocky. Effective rooting depth was estimated at just over 8 inches in 1998. Soils are a clay loam in texture with a neutral pH (6.8). Surface rock and pavement are abundant ranging from a combined 20-25% average cover in all years. Litter cover was high from 1985 to 1998 at around 70% due to a thick layer of dead cheatgrass. In 2003, litter cover decreased to only 37% due to the decline in cheatgrass cover from 47% to 9%. Soil movement and erosion were common in the past but not severe. In 2003, an erosion condition class assessment rated soils on the site to be stable.

The dominant overstory before the fire was Stansbury cliffrose. Although the plants were large averaging 7 feet in height, much of each plant was still available to deer. Cliffrose were moderate to heavily hedged in 1985 and 1991 prior to the fire, yet all plants displayed good vigor. In 1998, it appeared that all of the cliffrose had been lost due to the burn as no live plants were sampled on the site. In 2003 however, range trend personnel were surprised to find a moderate number of sprouting cliffrose on the site. Density was estimated at 260 plants/acre in 2003, with most of the population classified as heavily hedged mature plants. Seedling and young plants have been few in all years, but 20 young plants/acre were estimated in 2003. Vigor was normal throughout the entire population in 2003, and no decadent plants were sampled. In 2003, annual leaders were abundant and growth was good averaging over 4 inches on cliffrose. Mountain big sagebrush was also an important species on the site prior to the burn. Density was estimated at nearly 400 plants/acre in 1985, but in 1998 and 2003, no live sagebrush plants were sampled on the transect. Junipers were common downslope of the transect prior to the burn, with only a few live trees being left following the burn. Juniper canopy cover was estimated at 4% in 2003.

The dominant understory species from 1985 to 1998 was cheatgrass. Cheatgrass accounted for 97% of the grass cover and 81% of the total herbaceous cover in 1998, and was sampled in 99% of the quadrats. In 2003, cheatgrass declined significantly in nested frequency and average cover, but still remains abundant on the site as it was sampled in 96 of the 100 quadrats. Storksbill, an annual forb, significantly increased in frequency and cover between 1998 and 2003, changing places with cheatgrass for understory dominance. Storksbill contributed 99% of the forb cover and 73% of the total vegetation cover on the site in 2003. Perennial herbaceous species are sparse. In 2003, perennial grasses and forbs were sampled in only 9 and 7 total quadrats respectively.

1985 APPARENT TREND ASSESSMENT

Sheet erosion is occurring, but loss is fairly slow and no active gullies are evident. The only way to improve the soil trend would be an increase in herbaceous cover. Perennial species give more watershed protection and grazing value than cheatgrass. A release from grazing pressure during the flower and seed formation stages of the desirable plants would favor bluebunch wheatgrass. The vegetative trend appears stable. The key species are doing well. Neither the juniper nor broom snakeweed appear to be increasing.

1991 TREND ASSESSMENT

Basal vegetative cover is still very low at only 2%. Rock and pavement cover have increased to 25%, while litter cover has decreased to 64% with the majority of the litter cover coming from dried up cheatgrass. Amount of bare soil has only risen to 9%. With what few changes that have taken place, soil trend is stable, but still in very poor condition with the dominance of cheatgrass on the site. The browse trend is mixed. Mountain big sagebrush density has decreased by 83% due to drought and competition with cheatgrass. However, this site is marginal for mountain big sagebrush due to shallow, rocky soils and a lower precipitation regime. Elevationally, the sagebrush on this site is a lower extension of mountain big sagebrush that typically occurs at higher elevations with better moisture. Cliffrose is fairing much better with a population increase of 11% and coincidentally, reproductive potential (number of seedlings) and recruitment by young plants are both at 11%. However, cliffrose plants are tall tree-like forms that are partly unavailable to deer. Percent decadence is only 22% which is generally low considering the length of the drought. Browse trend is slightly down overall due some losses for sagebrush. There are not many perennial species occurring in the herbaceous understory. Trend is stable, but the understory is in poor condition due to the continued dominance of cheatgrass on the site. The abundance of cheatgrass poses a serious fire hazard on this site.

TREND ASSESSMENT
soil - stable (3)
browse - slightly downward (2)
herbaceous understory - stable, but very poor (3)

1998 TREND ASSESSMENT

Trend for soil appears stable. Percent bare ground is low and herbaceous vegetation and litter cover are abundant. No significant erosion is occurring on the site. The browse trend is down due to the 1996 fire which eliminated nearly all of the useful browse on the site, specifically cliffrose and mountain big sagebrush. The area is not an effective winter range at the present time due to the lack of useful browse. Trend for the herbaceous understory is up slightly especially for forbs, but condition is very poor due to the lack of perennial species and the abundance of cheatgrass. Cheatgrass currently provides 97% of the grass cover and 81% of the total herbaceous cover. Some type of fire rehabilitation should have been done on this site to provide some competition to reduce cheatgrass's dominance.

TREND ASSESSMENT
soil - stable (3)
browse - down due to fire (1)
herbaceous understory - up slightly, but in very poor (4)

2003 TREND ASSESSMENT

Trend for soil is stable even with a large decline in litter cover. Vegetation cover remains high at over 50%, and bare soil is low at only 5%. Erosion is minimal and soils were rated as stable by an erosion condition

class assessment in 2003. Trend for browse is up. It was thought that this site would no longer provide good winter range for mule deer because no live sagebrush or cliffrose plants were sampled in 1998 due to the wildfire that burned the site. Although typically fire intolerant, a moderate stand of sprouting cliffrose was sampled on the site in 2003. Density was estimated at 260 plants/acre in 2003, with most of the population being classified as mature. Unlike the pre-burn cliffrose population which were tall tree-like forms, the current population are smaller plants that are all available to deer. Young plants remain limited, but 20 young cliffrose/acre were sampled in 2003. Sagebrush was again not sampled in 2003. Trend for the herbaceous understory is slightly down. Perennial species have been sparse in all years, but further decreased in 2003. Although cheatgrass showed a significant decrease in frequency and cover, storksbill, an annual forb, significantly increased in both categories.

TREND ASSESSMENT
soil - stable (3)
browse - up (5)
herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --
Management unit 21 , Study no: 11

Type	Species	Nested Frequency				Average Cover %	
		'85	'91	'98	'03	'98	'03
G	Agropyron spicatum	16	16	20	9	.42	.22
G	Aristida purpurea	3	5	-	3	-	.15
G	Bromus tectorum (a)	-	-	b387	a290	46.88	8.72
G	Hilaria jamesii	-	-	4	-	.85	-
G	Poa secunda	a7	b17	a6	a4	.06	.04
G	Sitanion hystrix	-	5	4	2	.03	.03
Total for Annual Grasses		0	0	387	290	46.88	8.72
Total for Perennial Grasses		26	43	34	18	1.36	0.44
Total for Grasses		26	43	421	308	48.25	9.17
F	Alyssum alyssoides (a)	-	-	b253	a1	2.61	.00
F	Ambrosia psilostachya	-	-	-	2	-	.03
F	Antennaria rosea	-	-	4	-	.03	-
F	Astragalus calycosus	-	-	9	-	.06	-
F	Cirsium spp.	-	-	2	-	.24	-
F	Convolvulus arvensis	-	-	-	5	-	.01
F	Collinsia parviflora (a)	-	-	-	2	-	.00
F	Draba spp. (a)	-	-	11	5	.01	.01
F	Epilobium brachycarpum (a)	-	-	3	-	.01	-
F	Erodium cicutarium (a)	-	-	a176	b330	5.56	36.07
F	Lactuca serriola	-	-	b74	a7	.49	.02
F	Unknown forb-perennial	a3	a-	b18	a-	.28	-

Type	Species	Nested Frequency				Average Cover %	
		'85	'91	'98	'03	'98	'03
Total for Annual Forbs		0	0	443	338	8.20	36.10
Total for Perennial Forbs		3	0	107	14	1.11	0.05
Total for Forbs		3	0	550	352	9.32	36.16

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 21 , Study no: 11

Type	Species	Strip Frequency		Average Cover %	
		'98	'03	'98	'03
B	Cowania mexicana stansburiana	0	11	.01	.53
B	Gutierrezia sarothrae	1	0	-	-
B	Juniperus osteosperma	0	0	-	3.42
B	Tetradymia canescens	4	3	.15	-
Total for Browse		5	14	0.16	3.95

CANOPY COVER, LINE INTERCEPT --
Management unit 21 , Study no: 11

Species	Percent Cover	
	'98	'03
Cowania mexicana stansburiana	-	.80
Juniperus osteosperma	2.79	4.00

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 21 , Study no: 11

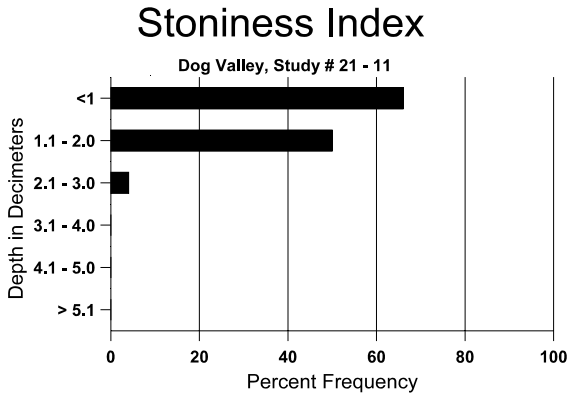
Species	Average leader growth (in)
	'03
Cowania mexicana stansburiana	4.1

BASIC COVER --
Management unit 21 , Study no: 11

Cover Type	Average Cover %			
	'85	'91	'98	'03
Vegetation	1.25	2.00	54.39	50.29
Rock	11.50	16.25	18.90	15.23
Pavement	8.25	9.25	6.03	7.13
Litter	72.25	63.75	66.49	36.77
Cryptogams	0	0	.04	0
Bare Ground	6.75	8.75	2.25	4.92

SOIL ANALYSIS DATA --
Management unit 21, Study no: 11, Study Name: Dog Valley

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
8.2	69.0 (9.1)	6.8	40.7	29.7	29.6	2.6	20.7	121.4	0.8



PELLET GROUP DATA --
Management unit 21 , Study no: 11

Type	Quadrat Frequency	
	'98	'03
Rabbit	13	2
Elk	1	2
Deer	35	43
Cattle	-	1

Days use per acre (ha)	
'98	'03
-	-
4 (10)	-
47 (116)	116 (286)
-	6 (14)

BROWSE CHARACTERISTICS --
Management unit 21 , Study no: 11

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Artemisia tridentata vaseyana											
85	**399**	-	133	200	66	-	33	0	17	0	20/26
91	**66**	-	-	66	-	-	0	100	0	0	12/21
98	**0**	-	-	-	-	100	0	0	0	0	-/-
03	**0**	-	-	-	-	-	0	0	0	0	-/-
Cercocarpus montanus											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
98	**0**	-	-	-	-	-	0	0	-	0	-/-
03	**0**	-	-	-	-	-	0	0	-	0	8/19
Cowania mexicana stansburiana											
85	**533**	-	-	533	-	-	63	0	0	0	69/75
91	**599**	66	66	400	133	-	44	56	22	0	82/70
98	**0**	40	-	-	-	600	0	0	0	0	-/-
03	**260**	-	20	240	-	20	23	69	0	0	21/23
Gutierrezia sarothrae											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**66**	-	-	66	-	-	0	0	-	0	6/4
98	**20**	-	20	-	-	-	0	0	-	0	-/-
03	**0**	-	-	-	-	-	0	0	-	0	12/25
Sambucus cerulea											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
98	**0**	-	-	-	-	-	0	0	-	0	26/13
03	**0**	-	-	-	-	-	0	0	-	0	18/22
Tetradymia canescens											
85	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
98	**120**	-	20	100	-	-	0	0	-	0	10/20
03	**80**	-	20	60	-	-	0	0	-	0	10/21